HALEY ALDRICH

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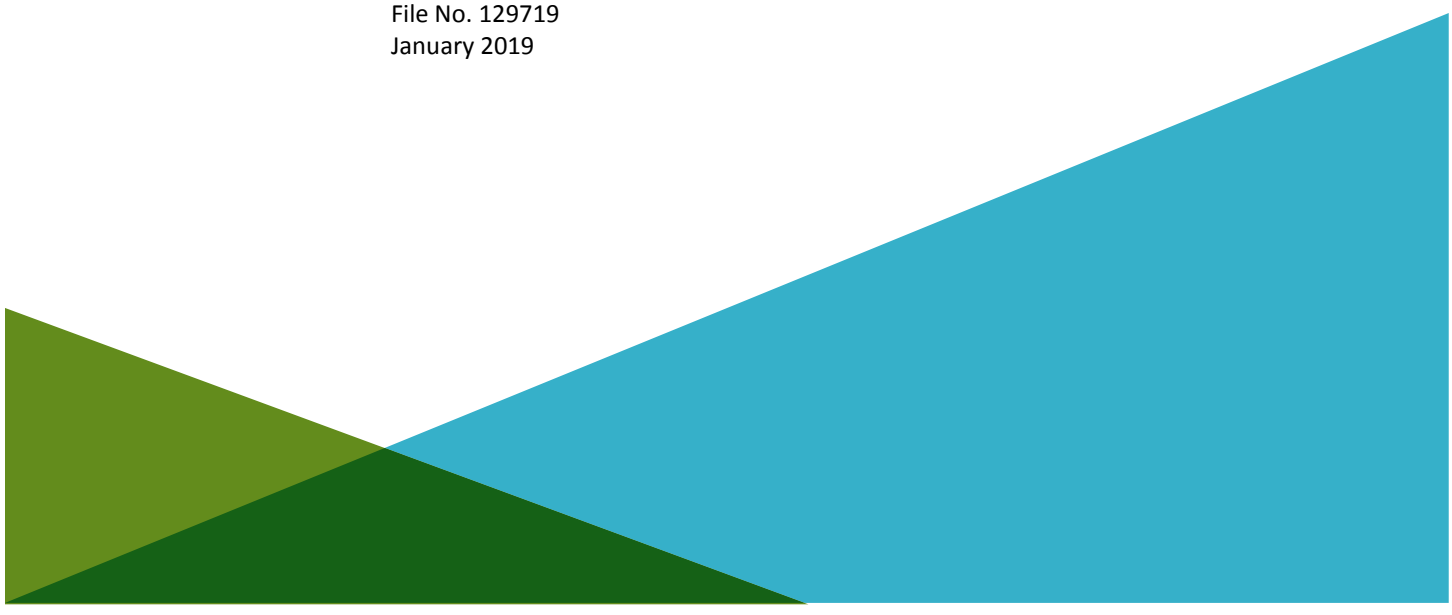
REPORT ON

VERIFICATION SAMPLING AND ANALYSIS PLAN
ARCELORMITTAL - INDIANA HARBOR LONG CARBON
EAST CHICAGO, INDIANA

by
Haley & Aldrich, Inc.
Cleveland, Ohio

for
ArcelorMittal USA LLC
Richfield, Ohio

File No. 129719
January 2019



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29 January 2019
File No. 129719

ArcelorMittal USA LLC
Environmental Affairs and Real Estate
4020 Kinross Lakes Parkway
Richfield, Ohio 44286-9000

Attention: Mr. Cary Mathias
Regional Waste Manager

Subject: Verification Sampling and Analysis Plan
Indiana Harbor Long Carbon
East Chicago, Indiana

Dear Mr. Mathias:

Haley & Aldrich, Inc. (Haley & Aldrich) has prepared the enclosed Verification Sampling and Analysis Plan (VSAP) to provide the scope and procedural details of field activities to be completed at the ArcelorMittal USA LLC (ArcelorMittal) - Indiana Harbor Long Carbon (IHLC) property located in East Chicago, Indiana. As you are aware, the IHLC property was included as part of the entire ArcelorMittal - Indiana Harbor East (IHE) facility that is undergoing RCRA Corrective Action (CA). The intention is to separate the IHLC property RCRA CA and to seek accelerated RCRA CA closure utilizing United States Environmental Protection Agency's (U.S. EPA) RCRA Facilities Investigation Remedy Selection Track (FIRST) – A Toolbox for Corrective Action (May 2016).

Project Background

On 30 May 2018, ArcelorMittal submitted a RCRA Facility Investigation (RFI) Data Sufficiency Evaluation (Evaluation), outlined in RCRA First Tool 4, to the U.S. EPA to demonstrate project Data Quality Objectives (DQOs) have been satisfied for the IHLC property, and that the data are sufficient to proceed to the next step in the RCRA FIRST process. The U.S. EPA responded with comments to the Evaluation on 19 July 2018 (July 2018 Comment Letter). ArcelorMittal responded to the U.S. EPA's comments on 11 January 2019 and has agreed to complete verification sampling as next step efforts to achieve closure.

Scope of Work

The VSAP includes the collection of groundwater samples to confirm that concentrations of constituents of concern (COCs) in groundwater are stable or decreasing at four monitoring well locations identified in

the U.S. EPA's July 2018 Comment Letter, and of surface and subsurface soil samples in unpaved areas to facilitate the completion of the property-specific Conceptual Site Model (CSM) and Human Health Risk Assessment (HHRA) for the IHLC property.

HEALTH AND SAFETY

All field activities will be performed in accordance with the RFI Work Plan Master Health and Safety Plan (HASP). Procedures for air monitoring during intrusive field activities will be performed in accordance with Section 6.0 of the HASP.

INVESTIGATION PROCEDURES

Soil and groundwater sampling methodology will be completed in accordance with the applicable Standard Operating Procedures (SOPs)/Work Test Procedures (WTPs) included in the U.S. EPA-approved Revised RCRA Facility Investigation Work Plan – Quality Assurance Project Plan (QAPjP; Earth Tech, Inc., February 2003).

Soil Boring Installation

Soil borings will be advanced and continuously sampled, in accordance with WTP 3.1, utilizing hollow-stem auger drilling techniques at ten locations throughout the unpaved areas of the IHLC property (Figure 1, Proposed Sample Location Plan and Table 1, Sample Summary Table). Soil borings will be advanced to approximately 10 feet below below surface grade depending on location and field conditions. Split-spoon samples will be collected with a decontaminated standard 1.4-inch inside diameter (ID), 2-inch outside diameter (OD) split-spoon sampler according to the procedures outlined in WTP 4.3. After each split-spoon sample is collected, the boring will be advanced to the next sample interval. After the soil sample is removed, the split spoon will be cleaned in accordance with procedures outlined in WTP 2.3 and Section 4.4 of the QAPjP. Each boring will be sampled and logged in accordance with WTP 2.1 and 3.2. Each sample will be field screened for the presence of total organic vapors (TOVs) using an appropriately calibrated photoionization detector (PID) in accordance with WTP 2.6. After collection, a portion of each sample will be retained for possible future chemical analysis.

The drilling tools, sampling tools, and equipment will be decontaminated according to the procedures outlined in WTP 2.3 and Section 4.4 of the QAPjP.

Upon completion of drilling and sampling in each borehole, the boring will be abandoned in accordance with WTP 3.1.

Soil Sampling

Two soil samples collected from each soil boring will be submitted to the laboratory for chemical analysis. One soil sample from each soil boring will be collected from the surface (0 to 2 feet), and a second soil sample will be selected based on field observations and headspace screening or will be collected from the interval immediately above groundwater. The soil samples, along with appropriate quality assurance/quality control (QA/QC) samples, will be packaged and shipped under proper chain-of-custody procedures in accordance with WTP 2.5 to TestAmerica Laboratories, Inc. (TestAmerica) in North Canton, Ohio, and analyzed for volatile organic compounds (VOCs), semi-volatile organic

compounds (SVOCs), total metals, sulfide, and cyanide in accordance with Project Target Parameters, Appendix IX Analytes.

Soil samples for possible laboratory VOC analysis will be collected using appropriate methodologies in accordance with WTP 2.1 and Section 4.1.2.2 of the QAPjP. Additional parameter analysis will be collected and prepared in accordance with the sample collection methodologies described in Section 4.1.2.2 of the QAPjP and in the order provided in Section 4.1.1.1 of the QAPjP, as appropriate.

Monitoring Well Installation and "First Water" Sampling

In response to the U.S. EPA's comments to the Evaluation, ArcelorMittal will complete verification groundwater sampling at three monitoring well locations (IMW-02-00001, IMW-02-00004S, and IFW-02-00022) on the IHLC property (Figure 1). The U.S. EPA also requested verification of groundwater sampling at abandoned monitoring well IMW-03-00029. However, existing monitoring well IMW-03-00004 was incorrectly placed on the Figure presented in the Evaluation and is actually located within the immediate vicinity of the abandoned monitoring well IMW-03-00029 (Figure 1). Monitoring well IMW-03-00004 is sampled on a semi-annual basis as part of ongoing monitoring of the Former C-Battery Coke Plant By-Products Recovery plume. Therefore, monitoring well IMW-03-00004 will not be sampled, and monitoring well IMW-03-00029 will not be reinstalled as part of the proposed verification sampling. The most recent groundwater sampling results from IMW-03-00004 will be included in the data summary report.

Monitoring well locations, IMW-02-00001 and IFW-02-00022, could not be field located and were likely abandoned or destroyed. Monitoring well IFW-02-00001 was originally located in the southeastern most corner of the IHLC property, a small piece of property bifurcated from the rest of the IHLC property by the Cline Avenue Bridge property owned by Cline Avenue Bridge LLC. Currently, the reconstruction of the bridge makes this non-contiguous corner inaccessible. Therefore, ArcelorMittal proposes to collect a "first water" sample IMW-02-00001R in the southern-most portion the IHLC property, north of the bridge (Figure 1). "First water" sample, IFW-02-00022R, will be collected in the vicinity of where monitoring well IFW-02-00022 was originally installed (Figure 1).

Soil borings for "first water" sample locations IMW-02-00001R and IFW-02-00022R will be installed with a drill rig equipped with hollow-stem augers in accordance with procedures outlined in Section 4.1.1.1 of the QAPjP and the with WTPs 3.1 and 4.1. To obtain a "first-water" sample, a soil boring will be advanced to approximately 5 feet below the interpreted depth of the groundwater table using 4.25-inch ID hollow stem augers. Once the water level inside the augers has visually stabilized, a prepacked well screen and riser pipe will be lowered inside the augers. Note, no soil samples will be submitted to the laboratory for chemical analysis.

A stainless steel-bladder pump will be used to remove groundwater from inside the prepacked well screen in the same manner as water is removed from a monitoring well during development and/or purging. Water quality information will be monitored with a flow-through cell and display handset. Groundwater will be purged until a minimum of 5 gallons have been removed, and the turbidity of the purge water is ≤ 10 NTU. If the borehole is low yielding, the boring will be evacuated to dryness once, prior to sample collection. Immediately upon removal of the purge water, a "first water" sample will be collected. The flow-through cell will be disconnected, and groundwater samples will be collected directly from dedicated, discharge tubing and placed into appropriate containers. Non-dedicated

materials used in the sampling process will be cleaned between wells using the decontamination procedures outlined WTP 2.3 or in Section 4.4 of the QAPjP.

The drilling tools, sampling tools, and equipment will be decontaminated according to the procedures outlined in WTP 2.3 and Section 4.4 of the QAPjP.

Following sample collection, these soil borings will be abandoned in accordance with WTP 3.1.

Monitoring Well Development

Existing monitoring well IMW-02-00004S will be redeveloped in accordance with WTP 4.1 using either bailing techniques or pumping methods. The usability of the well will be evaluated in accordance with WTP 3.7. Well development will be accomplished by removing non-representative groundwater from the well. A representative, stabilized groundwater condition will be documented by testing turbidity, pH, temperature, and specific conductance. These parameters will be measured using a multi-parameter water quality meter (or equivalent) in accordance with WTP 4.6 until the conditions listed in Section 4.1.1.1 of the QAPjP have been met.

Monitoring Well Sampling

A groundwater sample will be collected from monitoring well IMW-02-00004S in accordance with WTPs 2.1 and 4.2. The depth to groundwater measurement will be recorded prior to sampling. After gauging, but before sampling, groundwater will be purged from the monitoring well using low-flow sampling techniques until water quality criteria have stabilized in accordance with Section 4.1.1.1 of the QAPjP. The monitoring well will be purged and sampled using a stainless-steel bladder pump connected to a pump controller and air compressor. Water quality information will be monitored with a flow-through cell and display handset. The flow-through cell will be disconnected, and groundwater samples will be collected directly from dedicated, discharge tubing. Non-dedicated materials used in the sampling process will be cleaned between wells using the decontamination procedures outlined WTP 2.3 or in Section 4.4 of the QAPjP.

Groundwater Analyses

Groundwater samples, including appropriate QA/QC samples (Table 1), submitted for analysis will be packaged and shipped under proper chain-of-custody procedures in accordance with WTP 2.5. Samples will be sent to TestAmerica in North Canton, Ohio. Groundwater samples will be analyzed for the specific list of COCs as presented in Table 1.

DATA REVIEW AND ANALYSIS

After laboratory reports are received and field data are collected, the information will be added to the project specific database. Data will then be reviewed for compliance with QA/QC protocols, as well as for conformance with requested analyses listed on chain-of-custody documents in accordance with WTP 4.7 and Section 9.2 of the QAPjP. Deviations will be discussed with the laboratory for clarification or correction.

The validated laboratory data will be reviewed versus relevant applicable Phase II RFI Tier 1A and Tier 1B Screening Criteria. A Data Summary Report including tables and figures summarizing verification sampling activities will be prepared for review and approval to the U.S. EPA.

MANAGEMENT OF INVESTIGATIVE DERIVED WASTE (IDW)

Handling of IDW will be performed in accordance with WTP 2.7.

PLANNED DEVIATIONS FROM QAPjP

No planned deviations from the QAPjP are proposed.

SCHEDULE

ArcelorMittal intends to complete the field work described herein within 3 weeks following U.S. EPA's approval of the VSAP.

Sincerely yours,
HALEY & ALDRICH, INC.

Mark Pomfrey
Market Segment Leader – Heavy Industry

Peggy Stonier
Assistant Project Manger

Enclosures:
Table, Figure

c: John Hill; ArcelorMittal USA LLC

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References

1. Earth Tech, RCRA Facility Investigation Workplan – Quality Assurance Project Plant, February 2003.
2. Haley & Aldrich, Inc., RCRA Facility Investigation Data Sufficiency Evaluation, May 2018.
3. United States Environmental Protection Agency, Comments on Data Sufficiency Evaluation – Indiana Harbor Long Carbon, July 2018.
4. ArcelorMittal USA LLC, Response to Comments; Data Sufficiency Evaluation, 11 January 2019.

TABLE

TABLE 1
SAMPLE SUMMARY TABLE
VERIFICATION SAMPLING AND ANALYSIS PLAN
INDIANA HARBOR LONG CARBON

Activity	Applicable Work and Test Procedures	Parameters/Methodology	Total No. of Investigative Samples	Field Quality Control Samples				
				Field Duplicates[2]	Rinse Blanks	Trip Blanks	Matrix Spike[5]	Matrix Spike Duplicate[5]
Groundwater sampling[1] to be conducted at:	1.2, 2.1, 2.3, 2.4, 2.5, 3.2, 4.1, and 4.2			1	NA[3]	TBD[4]	1	1
IFW-02-00022R		VOCs/SW-8260B	1					
IMW-02-00001R		Metals, Total/SW-6010	1					
IMW-02-00004S		VOCs/SW-8260B	1					
Field parameter collection at monitoring well locations	4.6	Multi-Parameter Meter[6]: pH, specific conductance, temperature, dissolved oxygen, redox potential, and turbidity	4	NA	NA	NA	NA	NA
Surface soil sampling for evaluation of industrial and construction worker exposure pathways	1.2, 2.1, 2.3, 2.4, 2.5, 2.7, 3.1, 3.2, and 4.3	VOCs/ SW-8260B; SVOCs/ SW-8270C; Metals, Total/ SW-6010, 7000 Series; Sulfide/ EPA-9030B; Cyanide/ SW-9012A	10	1	1	NA	1	1
Subsurface soil sampling for evaluation of construction worker exposure pathways	1.2, 2.1, 2.3, 2.4, 2.5, 2.7, 3.1, 3.2, and 4.3	VOCs/ SW-8260B; SVOCs/ SW-8270C; Metals, Total/ SW-6010, 7000 Series; Sulfide/ EPA-9030B; Cyanide/ SW-9012A	10	1	1	NA	1	1
Field parameters to be collected during soil sampling.	2.6	Field Headspace Screening: Relative response of PID to VOCs	TBD	NA	NA	NA	NA	NA

Notes:

VOC: volatile organic compound

SVOC: semi-volatile organic compound

PID: photoionization detector

TBD: to be determined

1) Samples will be collected utilizing low-flow sampling techniques with a bladder pump, or equivalent, using disposable Teflon-line tubing

2) Field duplicates will be collected at a frequency of 1 per 10 investigative samples.

3) Rinse blanks will not be collected since disposable tubing will be used for sample collection.

4) One trip blank will be shipped with each shipping cooler containing aqueous VOC samples.

5) Matrix spike and matrix spike duplicates will be collected at a frequency of 1 per 20 investigative samples.

6) Field parameters will be collected using a Horiba U-22, or equivalent, attached to flow cell

FIGURE

LEGEND

- IMW-03-00010S — MONITORING WELL LOCATION
- P-02B — MONITORING WELL ABANDONED
- IFW-03-00038 — PROPOSED "FIRST WATER" SAMPLING LOCATION
- PROPOSED SOIL BORINGS
- EXCEEDS COMMERCIAL EXPOSURE TO GROUNDWATER SCREENING CRITERIA
- FENCE LINE
- PROPERTY LINE (APPROXIMATE)
- UNPAVED AREAS
- CLINE AVENUE BRIDGE, LLC PROPERTY

NOTES

1. PLAN BASED ON SURVEY AND BASE MAP ENTITLED "UTILITIES_BASE_IHE_2017_V2010.DWG" PROVIDED BY AECOM ON 24 AUGUST 2017.

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SCALE IN FEET

HALEY ALDRICH

ARCELORMITTAL INDIANA HARBOR LONG CARBON
EAST CHICAGO, INDIANA

PROPOSED SOIL BORING AND MONITORING WELL LOCATIONS

SCALE: AS SHOWN
DECEMBER 2018

FIGURE 1

O'BRIEN, JANET Printed: 1/18/2019 11:04 AM Layout: FIG 3
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